Planning for Community Technology and Telecommunications

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Introduction

A community-wide or regional technology/telecommunications master plan must address at least two key areas.

The **technology and telecommunications infrastructure** addresses network access--how citizens, businesses, and organizations in the community get connected to the network. The community network infrastructure can include subsystems like duct; fiber and copper cables; wireless systems; collocation facilities; network hubs and routers; and internal building wiring, including the jacks in the wall to which individual computers are connected.

The **network information services** address what citizens, businesses, and organizations do with the network once they are connected. These services are typically provided to citizens, local government, community groups, and non-profits. Businesses should purchase their services from other businesses to promote local economic development.

These services include Web site hosting; email accounts; mailing lists; online calendars; discussion forums; online directories of people, community groups, and businesses; and other kinds of online services needed by the community.

Communities choose to make modest investments in **infrastructure** to:

- Create a level playing field for private companies offering telecommunications services.
- Create a competitive marketplace that provides telecommunications users in the community a variety of choices in firms, pricing, and services.
- Promote the long term economic vitality of the community by ensuring that local businesses and other organizations have high bandwidth telecommunications services at affordable prices.

Communities choose to develop and manage **information services** to:

- Create a professional, high quality online presence for the community that presents the community as an attractive place to live and to work.
- Support citizen access to local e-government and e-governance services.

- Ensure that every citizen and business in the community has the skills and knowledge needed to participate fully in the Information Economy.

- To help nurture and to support a futures-oriented vision for the community with the goal of sustaining the community as a great place to live and to work.

- To give every citizen and civic group in the community an opportunity to have an online presence that is affordable and that protects the privacy of all users.

The development of the network infrastructure and the development of the information services are two activities that can be pursued both independently and in parallel. That is, neither is dependent on the other. However, the information services portion represents the minimum level of activity needed to help the community pursue its long term, futures-oriented vision. Any community of any size, regardless of financial resources, can make a modest and effective effort to develop and sustain community-based information services.

Telecommunications infrastructure development may appear more daunting, but communities large and small across the world are securing a better future for themselves by modest investments in this area, with the goal of increasing private sector investment and offerings in telecommunications services.

Community network infrastructure development

Initial assessment

- Perform initial assessment using the CSPP (www.cspp.org) *Living in the Networked World* community technology assessment tool. Virginia Tech provides meeting facilitation for this process.
- Identify primary infrastructure service areas (those to be included in initial build out)
- Identify secondary infrastructure service areas (those areas to be included later)

Identify key users

- Businesses (retail, offices, professional, at-home workers, etc)
- Apartment buildings
- Residential districts
- Government buildings
- Schools and libraries
- Hospitals, medical clinics, other health-related facilities

Develop sustainable business model

- Forecast use by immediate customers and users
- Forecast use by future customers and users
- Develop five, ten, and twenty year business models
- Estimate capital costs (construction, initial equipment expenditures, etc)
- Estimate operating costs (network management, business management, maintenance, repairs, capital reserve funds, etc)
- Identify potential members of board of nonprofit corporation
- Incorporate as nonprofit service company
- Establish operating procedures for the board
- Interview and hire operations manager (could be part time if the community is very small)
- Identify and procure bookkeeping and accounting services

Develop network management model

- Identify key network management tasks (e.g. monitoring, IIS address management, new service provision, customer support, troubleshooting, bandwidth management, etc)
- Determine feasibility of performing each task by paid staff vs. contracting out work
- Write RFP for outsourced services
- Manage RFP process
- Hire network management firm
- Provide ongoing supervision of network management firm
- Perform any ongoing in-house network management tasks

Perform initial engineering study

- Identify location of collocation/MSAP facility (all cable home runs back to this location)
- Ensure that collocation facility meets all necessary requirements for network equipment (power, HVAC, security, 24/7 access, monitoring, telecomm service access)
- Lay out initial cable runs
- Identify pull box and pedestal locations (based on proximity to key users)
- Identify above ground (aerial) cable runs and below ground (duct) cable runs
- Identify cable vault and/or equipment hut locations

Perform detailed engineering study and cost analysis

- Review initial engineering study
- Identify changes based on cost and geography/distance needs
- Complete detailed engineering specification
- Write RFP (Request For Proposal)

RFP (Request For Proposal) management

- Identify vendors interested in bidding on contract
- Mail RFP to vendors on RFP list
- Collect completed bids
- Technical review of bids and vendor qualifications
- Award contract

Contract management

- Monitor construction to ensure contractors follows standard industry guidelines for cable and equipment installation
- Certify operation of network once installation is complete
- Review network management practices and monitoring

Ongoing network management

- Monitor network management to ensure contractors fulfill the terms of all contracts.
- Monitor network use to ensure that network equipment and local backbones have adequate capacity to meet demand
- Collect user access fees
- Monitor and handle network abuse by end users
- Conduct periodic reviews of overall network performance to ensure that the network is scaling up to meet future demand
- Manage capital investment fund to ensure adequate funds for future network expansion

Community network information services development

Identify key services to offer

- Education and training on how to use the Internet (business use, local government use, civic and community use, personal use)
- Online presence for the town via a community Web site
- Support of local community and civic groups via email accounts, Web hosting, mailing lists
- Support for local e-government and e-governance services
- Community technology center for access, training, online education
- Economic development initiatives (business training, attracting firms from other areas, assisting entrepreneurs with startup and home-based businesses)

Identify funding and management model

- Identify short and long term goals
- Identify start up and ongoing operational costs
- Determine funding sources--probably a combination of support from local government (25-35%), user fees (50-65%), and grants (15-25%)
- Identify fiscal agent and management structure (i.e. probably a nonprofit corporation)
- Identify board of directors
- Procure bookkeeping and accounting services
- Advertise for and hire an operations manager/director (could be part time for very small communities)
- Identify other staff and skills needs and determine how to best use volunteers and donated resources
- If volunteers are used, develop a detailed volunteer management plan

Implement plan

- Determine whether community network will provide servers and services locally or outsource
- Set up essential services (e.g. Web server, email server, mailing list server, discussion forums, online calendars, etc)
- Develop management plan for services (e.g. registration, fee collection, user support, troubleshooting, system administration, etc)
- Begin offering services to the community

Provide training and support

- Work with local training resources to provide basic training (e.g. local schools, libraries, community college, private tutors, community technology center, etc)
- Develop support processes for access problems (e.g. network connection difficulties) and for end user software/hardware problems
- Develop training strategies to assist local businesses and entrepreneurs
- Provide special training programs to community and civic groups to help those groups get online quickly with high quality, professional sites

Content management

- Solicit members for a community content management committee, charged with maintaining the Web site, providing assistance to local community and civic groups, and management of volunteer assistance
- Set up committee management procedures and committee oversight
- Ensure that community Web site and other online information sources are updated regularly and present the community professionally and with the highest quality possible (compare local Web site to other community Web sites outside the local area)

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Dr. Andrew Michael Cohill is an information architect with an educational background in architecture, ergonomics, and computer science. He served as Director of the Blacksburg Electronic Village (BEV) from the start of the effort in 1993 until 2002. He teaches courses on community-wide telecommunications and information architecture regularly, and provides technology and telecommunications planning to communities and organizations. He is a widely published writer, and author and coeditor of the popular book about Blacksburg (*Community Networks: Lessons learned from Blacksburg, Virginia*), now in its second edition. He has served as co-chair of the Governor's Task Force on eCommunities for the Commonwealth of Virginia in 2000-2001. He recently advised Hewlett-Packard on their $15 million dollar Digital Village initiative, and the BEV was just awarded a U.S. Dept of Commerce TOP grant to create 25 community networks across Virginia.

Cohill has an international reputation for his efforts in network design for communities. He is a member of the National Advisory Board for Communities of the Future, a national coalition of thinkers and policy makers concerned with the sustainability and health of communities. He is a member of the Association For Community Networks, and is currently serving on the AFCN Board of Directors. He is serving his second term as President for the AFCN. He is currently working on a new book on communities and technology that will be published in the fall of 2002. He is in wide demand as a speaker on technology issues because of his shrewd insights and lively and understandable descriptions of technology issues.

Blacksburg has become widely known as the "most wired community in the world." In the fall of 1999, more than 87% of the town's residents were using the Internet, and over 75% of the town's businesses had made the Internet a regular part of their marketing. Virtually every home and business in the community have one or more broadband access options at home and at work.

Cohill has served as Director of the project since July of 1993; he is responsible for the design and development of electronic village services, supervises a research and development group, and oversees an operations group that manages the BEV office and administrative services. He also directs the long range planning effort for the group, and serves as an advocate for networking in the university and around the Commonwealth of Virginia. It is serving as a model for "smart communities" being developed across the country.

A variety of innovative services and network access methods have been developed for the BEV. Applications include education, medical uses, government and general information, and other retail and commercial opportunities. Current BEV work includes the design and development of a community MSAP (Multimedia Services Access Point), and the development of a community fiber infrastructure.